Texting and Its Impact on Post-Event Processing and Symptoms of Social Anxiety

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TEXTING AND ITS IMPACT ON POST-EVENT PROCESSING AND SYMPTOMS OF SOCIAL ANXIETY

A Thesis
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts

By
Amanda Nicole Newquist
August 2018
TEXTING AND ITS IMPACT ON POST-EVENT PROCESSING AND SYMPTOMS OF SOCIAL ANXIETY

Date Recommended 6/27/2018

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TEXTING AND ITS IMPACT ON POST-EVENT PROCESSING AND SYMPTOMS OF SOCIAL ANXIETY

Amanda Nicole Newquist August 2018 56 pages

Directed by: Jenni Redifer, Sally Kuhlenschmidt, and Daniel McBride

Department of Psychology Western Kentucky University

The purpose of this study is to evaluate how individuals with social anxiety perceive a social event after a texting conversation compared to a face-to-face conversation. This review is known as post-event processing. This study included 154 participants (89 males and 65 females). These participants were recruited through Amazon Mechanical Turk. Each participant was asked to imagine a social situation where they experienced a high level of anxiety. The results of the study showed evidence that the self-reported level of trait anxiety was positively correlated with the self-reported level of state anxiety. Self-reported level of trait anxiety was positively correlated with self-reported level of PEP in an individual. Additionally, self-reported level of state anxiety was positively correlated with self-reported level of PEP. Individuals who reported higher levels of trait anxiety reported lower levels of PEP in the texting conversation compared to the face-to-face conversation.
**Introduction**

Social anxiety disorder (SAD), or social phobia, is the fourth most common mental disorder in the world (Makkar & Grisham, 2011). According to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*; American Psychiatric Association, 2013), individuals with SAD are characterized by their persistent fear of social situations in which they could be criticized or negatively evaluated by other people around them. Post-event processing (PEP) is a detailed review that occurs after a social event where individuals are preoccupied with negative aspects of their performance during the event such as feelings of anxiety and negative self-perceptions. They think about how they could have performed differently in that situation. PEP is thought to play a major role in the development and maintenance of SAD (Clark & Wells, 1995).

PEP has been found to occur in face-to-face communication (Lundh & Sperling, 2002; Rachman, Grüter-Andrew, & Shafran, 2000). Face-to-face communication is defined as an interaction that occurs between a minimum of two people and is often in the form of spoken words. Each of the individuals exchange words at least once. These words are more elaborate than a greeting (Warren, 2006). Texting has become a more common method for individuals to socialize with each other (Philippot & Douilliez, 2011). Texting is a form of communication in which one individual types a message and sends it to a recipient via a cellular phone (Lee, Tam, & Chie, 2014). Individuals with higher levels of social anxiety have been found to prefer texting over face-to-face conversations (Lee et al., 2014; Pierce, 2009; Reid & Reid, 2007). However, the specific relationship between texting and its effect on social anxiety and PEP had not been
examined. To further explore the relationship between social anxiety and PEP, this study investigated whether individuals experience lower levels of social anxiety and PEP after a texting conversation compared to a face-to-face conversation.

**Diagnostic Criteria for SAD**

According to the *DSM-5* (American Psychiatric Association, 2013), anxiety disorders have features of excessive fear and anxiety. Fear is the emotional response to a real or perceived threat that occurs in a present situation. Anxiety occurs when individuals anticipate a future threat. An individual with SAD must experience symptoms of anxiety in one or more social situations where the individual believes that he or she might be scrutinized by other people. Examples of relevant social situations may include eating, using the restroom, having a conversation, or giving a speech. During these social situations, the individual is afraid that he or she will show symptoms of anxiety which will result in being judged by other people. That person may encounter future social situations with intense fear or avoidance. The anxiety or fear tends to be greatly exaggerated and is out of proportion to the real threat in the social situation. In order to be diagnosed with SAD, the individual must have experienced significant daily distress or impairment from these symptoms for six months or longer. These symptoms are not explained by the physiological effects of a substance or symptoms of another psychological or medical condition.

**State and Trait Anxiety**

Symptoms of anxiety can be defined by state or trait anxiety. State anxiety is a temporary condition that changes in response to a situation. Trait anxiety is the relatively stable level of anxiety of an individual (Blankstein, 1976). The relationship between state
and trait anxiety will be examined in this section to determine what type of anxiety will be measured in the present study. The review will be based on the Multidimensional Interaction Model of Anxiety (MIMA; Endler & Kocovski, 2001). The MIMA defines different types of trait and state anxiety. Trait anxiety refers to four situations in which individuals experience an increase in state anxiety: social evaluation, physical danger, ambiguous anxiety, and daily routines. Social evaluation trait anxiety occurs when individuals are in situations where they are potentially being observed or evaluated by other people. Physical danger trait anxiety happens when individuals are in situations where they may be physically hurt. Ambiguous trait anxiety occurs when individuals experience a new situation and are uncertain of how to act in this situation. An example of this type of situation occurs when an individual goes to a party and has never been to the host’s house. Daily routines trait anxiety happens when individuals experience anxiety when they are engaged in daily routines that other people would consider harmless (Endler & Kocovski, 2001). State anxiety has two dimensions: cognitive-worry and autonomic-emotional. Cognitive-worry reflects symptoms of anxiety such as helplessness, difficulties with concentration, inadequacy, and self-consciousness. Autonomic-emotional includes symptoms of anxiety such as perspiration, irregular breathing, dry mouth, racing heartbeat and feelings of tension (Endler, Edwards, & Vitelli, 1991). The MIMA says that the level of state anxiety changes when the type of stress experienced in a situation is related to a trait anxiety dimension. State anxiety is not expected to change if the stress is not relevant to the trait anxiety dimension. An example of this model is an individual who may have high levels of trait anxiety for social evaluation and low levels of trait anxiety for physical danger. When this individual
perceives a social evaluation, the individual’s level of state anxiety increases. If the individual experiences a physical danger, their level of state anxiety would be less likely to change (Kantor, Endler, Helsegrave, & Kocovski, 2001).

Beard and Amir (2010) and Schulz, Alpers, and Hofmann (2008) have found support for the MIMA in relation to the thoughts of individuals with social anxiety. Beard and Amir (2010) observed interpretation bias in relation to the participants’ level of social anxiety and state anxiety. Interpretation bias occurs in individuals with social anxiety when they tend to interpret a social situation in a negative manner. In the first session, the participants completed the Liebowitz Social Anxiety Scale (LSAS) to measure trait anxiety and the Interpretation Questionnaire (IQ) to assess how social situations are interpreted. In the second session, they were asked to give an impromptu speech on a topic such as seat belt laws, corporal punishment, or health care that was recorded and rated by a graduate student. Participants completed the STAI-state to assess for state anxiety after the speech. The results provided evidence that trait social anxiety led to an increase of state social anxiety through how individuals interpreted social situations.

Schulz, Alpers, and Hofmann (2008) observed the relationship between negative self-focused cognitions and its effects on trait and state social anxiety. After participants completed the Social Phobia Anxiety Inventory (SPAI) to measure trait anxiety, they were assigned to either the negative anticipation or relaxed anticipated condition. In the negative anticipation condition, participants were asked to remember social situations that did not go well. In the relaxed anticipation condition, participants were asked to remember pleasant thoughts, feelings, and images while they listened to relaxing music
and ocean waves. State anxiety was assessed at different time intervals by answering the item: “How anxious do you feel at the moment?” They were asked to give a video-taped speech about an imaginary job application where they discussed their strengths and weaknesses. The results showed that trait and state anxiety increased when individuals engaged in more negative self-focused thoughts compared to when they were relaxed.

Previous research (Beard & Amir, 2010; Schulz, Alpers, & Hofmann, 2008) found a relationship between trait and state anxiety and thus supported the MIMA. If individuals had high levels of trait social anxiety, state anxiety was more likely to increase in social situations. In order to further understand the relationship between trait and state anxiety, this study included both trait and state anxiety measures.

PEP

PEP occurs when individuals with SAD review their performance after a social event. This review tends to be detailed and to be repeated multiple times. It consists of rumination as individuals with SAD focus on feelings of anxiety and negative self-perceptions. PEP has been found to occur within a period of 24 hours to several weeks after the event (Gaydukevych & Kocovski, 2012). Clark and Wells (1995) discussed a cognitive model of social phobia that explains the occurrence of PEP. The model describes four pathological processes. The first process is known as self-focused attention (SFA), in which individuals with social anxiety focus on their behaviors, physiological arousal, and emotions during a social situation. As they focus on themselves, their awareness of their anxiety leads to misinterpreting how other people think about them (Gaydukevych & Kocovski, 2012). A second process happens when these individuals use safety behaviors. Safety behaviors are behaviors that attempt to decrease the risk of being
negatively evaluated. Examples of safety behaviors may include standing very still in order to prevent shaking or speaking very quickly during a speech in order to avoid long pauses. A third process occurs when these individuals overestimate the number of negative thoughts that other people had of them in the social situation. These thoughts may consist of evaluating symptoms such as blushing, shaking, and sweating. Finally, PEP occurs in the fourth process where these individuals remember the situation in detail. As they remember the event, they primarily focus on negative self-images, failures, and other aspects of rejection. The model suggests that the feelings of anxiety and the negative self-perceptions of these individuals are embedded into memory. These memories resurface when a similar event occurs (Clark & Wells, 1995).

Gaydukevych and Kocovski (2012), Mitchell and Schmidt (2014), Makkar and Grisham (2011), and Zou and Abbott (2012) evaluated PEP in relation to the other three processes of the Clark and Wells’ (1995) model. Gaydukevych and Kocovski (2012) examined the relationship of SFA and PEP in individuals with SAD where they hypothesized that individuals who observed themselves would report more PEP within a 24-hour period than those who focused on the other person in the conversation. It was also predicted that a positive correlation would be found between baseline levels of trait social anxiety and PEP. The participants engaged in a five-minute conversation with a confederate. In the high SFA group, participants were told to pay attention to their thoughts, actions, and feelings as they were involved in a conversation. In the low SFA group, the participants were instructed to focus on the facial expressions and what was said by their partner. The Social Interaction Anxiety Questionnaire (SIAS) measured trait anxiety. The Thoughts Questionnaire (TQ) and the Post-Event Processing Questionnaire
(PEPQ) were used to assess PEP. The results indicated that trait social anxiety was positively correlated with PEP. In addition, individuals who engaged in SFA were more likely to engage in negative self-thought during the post-event period.

Mitchell and Schmidt (2014) observed the relationship between PEP and in-situation safety behaviors where they predicted that state anxiety and in-situation safety behaviors would be related to the level of PEP in individuals with high levels of trait anxiety. Participants were told to give a three-minute videotaped speech where they could choose the topic. The SIAS was used to measure trait anxiety. The Post-Event Processing Questionnaire-Revised (PEPQ-R) was used to assess for PEP. The Subjective Units of Distress Scale (SUDS) was used to measure state anxiety. The Subtle Avoidance Frequency Examination (SAFE) assessed the frequency of in-situation safety behaviors. The results indicated that in-situation safety behaviors were associated with greater levels of PEP. However, the results showed no significant relationship between state anxiety and PEP. As the participants were not formally diagnosed with SAD, these individuals may experience less state anxiety and PEP compared to individuals who are diagnosed with SAD.

Makkar and Grisham (2011) and Zou and Abbott (2012) observed how individuals with social anxiety interpret negative thoughts from other people about their performance. Makkar and Grisham (2011) predicted that a greater level of PEP would occur after receiving feedback for a speech than compared to a conversation. In the speech task, participants were instructed to give a five-minute speech. In the conversation task, participants were told to engage in a brief conversation with another participant. The Fear of Negative Evaluation Scale (FNES), the SIAS, and the Social Phobia Scale (SPS)
were used to assess trait anxiety. State anxiety was measured by asking the participants to rate their anxiety based on a scale of 0 (no anxiety) to 100 (extreme anxiety). PEP was assessed using the extended version of the PEPQ. The results revealed that participants with higher levels of trait social anxiety were more likely to have negative assumptions and engage in more PEP after the speech task compared to the conversation task. Zou and Abbott (2012) asked participants to engage in a five-minute conversation. After the conversation, participants received either a high score or a moderate score for their performance during the task. The SIAS, the SPS, and the Brief Fear of Negative Evaluation Scale (BFNE) were used to evaluate trait anxiety. The State Anxiety Rating (SAR) measured state anxiety. The Performance Questionnaire (PQ) was used to allow participants to rate aspects of the performance such as stuttering and eye contact. The TQ was used to measure the thoughts specifically related to PEP. The results found no significant difference for state anxiety in either condition. However, individuals with high levels of trait social anxiety reported higher levels of PEP when they received a moderate score compared to those who received high scores.

Lundh and Sperling (2002) and Rachman, Grüter-Andrew, and Shafran (2000) found evidence of PEP in individuals with social anxiety. Lundh and Sperling (2002) hypothesized that the level of PEP the same day of the event and the following day would correlate with the level of social anxiety and the level of negative PEP on the day of the event would predict the level of negative PEP on the following day. Each participant was interviewed about their experiences with social anxiety. After the interview, each participant filled out the SPS as a measure of social anxiety. Then, they were given the Post-Event Processing Record (PEPR) and were instructed to complete it over the
following week. After a week, they gave their PEPR questionnaires to the experimenter. The results indicated that negative PEP was highly consistent over the course of two days, which shows that the level of PEP on the day of the event was predictive of the level of PEP the following day. Rachman, Grüter-Andrew, and Shafran (2000) interviewed participants in a semi-structured format using the PEPQ. Each participant completed the SPAI to assess for symptoms of social anxiety. The results showed that individuals with higher levels of social anxiety were more likely to have intrusive thoughts about past social events. They reported that they struggle to forget the event and experience more negative thoughts as they process the event. To summarize, PEP has been found to play a role in the development and maintenance of social anxiety and that different types of social situations affect the level of PEP. The nature of the situation (e.g. texting) may also impact individuals with social anxiety and the level of PEP after a social situation (Philippot & Douilliez, 2011).

**Texting and Social Anxiety**

Many people use texting as a form of communication (Lee et al., 2014). Individuals with social anxiety may be attracted to texting because it is a less formal style of communication and allows for individuals with social anxiety to have more control over the social interaction (Philippot & Douilliez, 2011). As texting does not require individuals to interact face-to-face, it may allow for individuals to have less concern about their appearance. Thus, the perception of negative outcomes may be reduced by eliminating nonverbal cues. Individuals with social anxiety may feel safer about self-disclosing when they text other people (Lee et al., 2014).
Lee and colleagues (2014), Pierce (2009), and Reid and Reid (2007) have examined the relationship between texting and social anxiety. Pierce (2009) predicted a positive relationship between trait social anxiety and feeling more comfortable texting. A survey created by the author was used to measure the participants’ level of trait social anxiety and their use of technology. The results revealed that social anxiety influenced the use of technology such that those who were more anxious preferred texting.

Reid and Reid (2007) provided additional information on the relationship between social anxiety and preference for texting where they hypothesized that individuals with symptoms of social anxiety would choose texting over calling people. The Leary Social Anxiousness Scale assessed state anxiety during or after a social situation. The Leung’s Online Chat Survey was used to determine the reasons for using texting or phone calls. The results indicated individuals with social anxiety were more likely to report that they prefer to text other people over making a phone call.

Lee and colleagues (2014) predicted that social anxiety would positively correlate with text messaging and negatively correlate with making phone calls. The participants completed the Mobile Phone Usage Questionnaire (MPUQ) to measure cell phone usage in a typical day. The level of trait anxiety was measured using the Interaction Anxiousness Scale (IAS). The study showed results similar to Pierce (2009), and Reid and Reid (2007) in that individuals with social anxiety prefer texting over making phone calls.

Previous research (Lee et al., 2014; Pierce, 2009; Reid & Reid, 2007) shows that individuals with higher levels of social anxiety prefer texting rather than talking to someone face-to-face or over the phone. These studies indicate that texting may be more
attractive to individuals with social anxiety. However, these studies fail to show the relationship between social anxiety, PEP, and texting. Further research may help in understanding the relationship between texting and the level of PEP in individuals with social anxiety.

The Present Study

After a social event has occurred, individuals with SAD tend to engage in PEP, which may contribute to maintaining symptoms of SAD (Gaydukevych & Kocovski, 2012). Using technology for conversations may minimize the effects of symptoms of social anxiety (Lee et al., 2014; Pierce, 2009; Reid & Reid, 2007). If individuals with social anxiety are texting other people, they may become less focused on their appearance and less concerned about their non-verbal cues. If so, then texting may help reduce symptoms of social anxiety (Lee et al., 2014). The current study examined how individuals with different levels of social anxiety perceive face-to-face social situations as compared to texting social interactions. In this study, participants were asked to recall different social situations and rate how much they thought about the event after it occurred. The hypotheses for this study were:

1. The self-reported level of trait anxiety will be positively correlated with the self-reported level of state anxiety in an individual.
2. The self-reported level of trait anxiety will be positively correlated with the self-reported level of PEP in an individual.
3. The self-reported level of state anxiety will be positively correlated with the self-reported level of PEP in an individual.
4. Individuals who report higher levels of trait anxiety will report lower levels of PEP in the texting conversation compared to the face-to-face conversation.
Method

Participants

Participants, who were at least 18 years old, were obtained from an online marketplace known as Amazon Mechanical Turk. Mechanical Turk allows individuals to post tasks that can be completed more efficiently with human beings than computers (Amazon Mechanical Turk, 2017). Researchers upload surveys and choose a compensation amount for completing the task. Mechanical Turk users can find these surveys by using keywords or the amount of compensation (Beymer, Holloway, & Grov, 2018). The workers can choose a start time that is convenient but have to complete the task in a certain amount of time. Participants were given 30 minutes to complete the task. After finishing the task, they receive monetary compensation for their work (Amazon Mechanical Turk, 2017).

Participants included 176 Workers on Mechanical Turk, which consisted of 102 males (58.0%) and 74 females (42.0%). This sample had more males compared to the 2016 U.S. Census data of 49.2% Males and 50.8% females (U.S. Census Bureau, 2016). They were selected to be located in the United States based on a platform on Mechanical Turk known as Systems Qualifications. They were only included if they had an acceptance rate of 95% or higher for completing tasks on Mechanical Turk (Amazon Mechanical Turk, 2017). Participants received $1.50 for completing the questionnaires. Participants read in the informed consent that they would only be compensated for their work if they pass the attention checks. The original criteria required participants to correctly answer all five attention checks. However, a wording issue was discovered with one of the attention check items so the criteria for being included and paid was reduced
from five to a minimum of two passed. Three of the participants failed to answer two or more attention checks correctly out of five attention checks and their data was dropped. Prior to collecting data, the researcher and four graduate students read the assessments without answering any of the items. The average time to read the assessments was 9.88 minutes (SD = 3.42). If the participants completed the assessments below one standard deviation for this sample (three minutes or less), the participants were still paid for their participation. However, their data was not included in the study. Participants were also not included if they had more than three incomplete items.

The data of three participants were excluded from the final sample due to incorrectly answering more than two of the attention checks. Seventeen participants were excluded from the final sample, due to their completing the assessments in less than three minutes. Two participants were excluded for due to incomplete questionnaires. Thus, the final N was 154 Workers, which included 89 males (57.8%) and 65 females (42.2%).

The mean age of the final sample was 33.16 years (SD = 9.47), with ages ranging from 19 to 64. The final sample mostly self-identified as Caucasian (N = 115; 74.7%; see Table 1).
<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Number Selecting</th>
<th>Percentage</th>
<th>U.S. Census*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>9</td>
<td>5.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>17</td>
<td>11.0%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>115</td>
<td>74.7%</td>
<td>76.9%</td>
</tr>
<tr>
<td>Native American</td>
<td>2</td>
<td>1.3%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>8</td>
<td>5.2%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>1.9%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

* The ethnicity percentages were not available from the Census Bureau for 2017.


The majority of the sample indicated that they had earned a bachelor’s degree (n = 61; 39.6%; see Table 2).
### Table 2

**Level of Education - Total Sample**

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Number Selecting</th>
<th>Percentage</th>
<th>U.S. Census*</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school graduate or equivalent (e.g. GED)</td>
<td>24</td>
<td>15.6%</td>
<td>28.9%</td>
</tr>
<tr>
<td>Some college, no degree</td>
<td>31</td>
<td>20.1%</td>
<td>18.9%</td>
</tr>
<tr>
<td>Associate's degree</td>
<td>21</td>
<td>13.6%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>61</td>
<td>39.6%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Master's degree</td>
<td>14</td>
<td>9.1%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Professional degree</td>
<td>2</td>
<td>1.3%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Doctorate degree</td>
<td>1</td>
<td>0.6%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>


### Measures

The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) is a trait anxiety measure of 20 items that is used to assess anxious and avoidance behaviors in different social situations (see Appendix A). Individuals rate items based on a scale of 0 (not at all characteristic of me) to 4 (extremely characteristic of me). An example of a statement is “I worry about expressing myself in case I appear awkward.” Total scores can range from 0 to 80. A score of 34 or higher indicates high levels of social anxiety according to Mattick and Clark (1998). The SIAS demonstrates good internal consistency, ranging from $r = .88$ to $.93$, and a high test-retest reliability, ranging from $r = .86$ to $.92$ (Mattick & Clarke, 1998). The assessment also shows moderate to strong
convergent validity with other measures of SAD. These measures include the SPS \((r = .73)\) and the SPAI \((r = .85;\) Peters, 2000).

The State Social Anxiety Questionnaire (SSAQ; Kashdan & Steger, 2006) is a seven-item measure that is used to measure state social anxiety (See Appendices B and C). Two versions with different attention checks were used in the study. Each item is answered based on a five-point scale of 1 (Very Slightly/Not at All) to 5 (Extremely). Scores can range from seven to 35. A high score indicates more state anxiety. The SSAQ shows strong internal consistency. Kashdan & Steger (2006) reported a Cronbach alpha coefficient of 0.91. Moderate convergent validity was found between the SSAQ and the SIAS \((r = 0.56;\) Kashdan & Steger, 2006).

Two modified versions of the Extended Post-Event Processing Questionnaire, 15 Item (E-PEPQ-15; Wong, 2015) were used in this study (see Appendices D and E). The original E-PEPQ-15 has been used to assess post-event processing in individuals with SAD. This assessment asks participants to choose a social situation that may have caused discomfort or anxiety and to answer 15 items about their thoughts after that situation. An example of an item is “Did you try to resist thinking about the event?” Each modified version is based on the type of conversation to be evaluated by the participant: face-to-face or texting conversations. On each version, participants are given a list of social situations. They are asked to remember or imagine one of these situations and to describe the situation they have chosen. Participants rate items on an 11-point Likert scale that ranges from 0 (not at all) to 100 (very much so). The total score is based on the mean of all items. Total scores above 75 indicated that individuals were highly likely to think about the event (Wong, 2015). Wong (2015) reported a Cronbach’s alpha coefficient of
0.94, which indicates high internal consistency. The original E-PEPQ-15 has good construct validity and a stronger positive correlation with social anxiety as measured by the SPS \( r = 0.37 \) than with depression as measured by the Depression Anxiety Stress Scales (DASS; \( r = 0.19 \); Wong, 2015).

Before collecting data, content validity and face validity of the two modified versions of the E-PEPQ-15 was evaluated. PEP is defined as a review of a social event that is detailed and repeated multiple times that focuses on feelings of anxiety and negative self-perceptions (Clark & Wells, 2015; Gaydukevych & Kocovski, 2012; Rachman, Grüter-Andrew, & Shafran, 2000; Lundh & Sperling, 2002). Each version of the E-PEPQ-15 includes items related to this definition, such as how much the person thought about the event, how difficult it was to forget about the event, and how much it affected that person’s concentration. It also addresses how the thoughts and feelings about the event worsened over time and what the person wishes that he or she could change about the event (Wong, 2015). The E-PEPQ-15 displays content validity based on this review of the literature. To evaluate face validity, four psychology graduate students were asked what the purpose was for each of the two modified versions of the E-PEPQ-15. The names of the assessments were removed in order to avoid influencing the reviewers. Two of the graduate students indicated that the two versions of the E-PEPQ-15 were assessing symptoms of social anxiety such as negative thoughts in social interactions that were face-to-face or involved technology. Another graduate student reported that the assessment was for what happened during or after a situation such as a texting or a face-to-face interaction. The fourth graduate student indicated that the measure assessed the thoughts and distress about a social interaction after the occurrence
of this interaction. Based on this information, the modified versions of the E-PEPQ-15 appear to have reasonable content validity and face validity.

**Procedure**

IRB approval was obtained before data collection (see Appendix F). Participants were solicited using Mechanical Turk. On Mechanical Turk, they clicked on a link which led to the beginning of the survey. The survey questions were presented via Qualtrics, a software which allows for researchers to create surveys and for participants to complete these surveys online. Before reading the informed consent form, a pre-screening question (e.g. “Have you ever had a conversation [more than a simple greeting] via texting on a cellular phone?”) was included for potential participants (Appendix G). Individuals who said that they have never had this type of conversation were not included in the study. If potential participants indicated that they had a texting conversation with someone, they read the informed consent (see Appendix H). They agreed to the informed consent by advancing to the next screen. Then, they answered items on the SIAS. After they completed the SIAS, they completed two modified versions of the E-PEPQ-15 presented in a randomized order. On each version of the modified E-PEPQ-15, they were asked to remember or imagine a social situation in which they experienced a high level of anxiety. They described the situation they had chosen and answered questions about that situation. One version of the E-PEPQ-15 inquired about a face-to-face social situation. Another version asked about a text-based conversation. They answered items for the SSAQ to measure state anxiety about the social situation after each modified version of the E-PEPQ-15. The names of the questionnaires were not seen by the participants in order to reduce their guessing hypotheses (i.e., the ability to guess a measure’s content based on
its name). After completing these assessments, they completed the demographic questions (see Appendix I). Once they completed the demographic questions, the participants were debriefed regarding the purpose of the study (see Appendix J). They were subsequently given a code to type into Amazon Mechanical Turk so that they could receive compensation of $1.50. The average time to complete the assessments was 8.63 minutes (SD= 4.20). Missing values on the questionnaires were replaced by the mean score of the particular questionnaire. For the SIAS, 0.6% of the sample had one missing value. For the face-to-face version of the E-PEPQ-15, 1.3% of the sample had one missing value. For the face-to-face version of the SSAQ, 1.3% of the sample had one missing value. For the text version of the E-PEPQ-15, 0.6% of the sample had one missing value. For the text version of the SSAQ, 1.3% of the sample had one missing value.
Results

Descriptive Statistics

To determine the typical level of trait anxiety, state anxiety, and PEP in the sample, means and standard deviations were calculated for all measures (See Table 3).

Table 3

*Descriptive Statistics – Total Sample*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M (SD)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIAS</td>
<td>154</td>
<td>31.77 (22.02)</td>
<td>[28.26,35.27]</td>
</tr>
<tr>
<td>SSAQ Face-to-Face</td>
<td>154</td>
<td>20.52 (8.15)</td>
<td>[19.22,21.82]</td>
</tr>
<tr>
<td>SSAQ Text</td>
<td>154</td>
<td>21.55 (9.11)</td>
<td>[20.09, 23.00]</td>
</tr>
<tr>
<td>E-PEPQ-15 Face-to-Face</td>
<td>154</td>
<td>50.08 (25.09)</td>
<td>[46.08,54.07]</td>
</tr>
<tr>
<td>E-PEPQ-15 Text</td>
<td>154</td>
<td>45.81 (25.11)</td>
<td>[41.81,49.81]</td>
</tr>
</tbody>
</table>

*Note.* CI = confidence interval; E-PEPQ-15 = Extended Post-Event Processing Questionnaire-15 Item, SSAQ = State Social Anxiety Questionnaire.

For the SIAS, 48.7% of participants reported a score of 34 or higher, which was the cutoff for high level of trait anxiety according to Mattick and Clark (1998). For the SSAQ in the face-to-face situation, 5.8% of participants reported a score of 35 or higher, which was the cutoff for a high level of state anxiety according to Kashdan and Steger (2006). For the SSAQ in the text situation, 4.5% of participants reported score of 35 or higher, which indicated a high level of state anxiety according to Kashdan and Steger (2006). For the E-PEPQ-15, 16.2% of participants reported a score of 75 or higher, which was the cutoff for a high level of PEP according to Wong (2015). For the E-PEPQ-15 in
the text situation, 8.4% of participants reported a score of 75 or higher, which was the
cutoff for a high level of PEP according to Wong (2015).

Psychometric Qualities

Internal consistency was calculated to estimate the reliability of the assessments. All assessments showed a high level of internal consistency. Cronbach’s alpha for the SIAS was .91 and the Cronbach’s alphas for the face-to-face and the text versions of the SSAQ were .93 and .94, respectively. Cronbach’s alphas for the face-to-face and the text versions of the E-PEPQ-15 were .95 and .96, respectively.

Correlations

A Pearson Product-Moment Correlation Coefficient matrix was calculated to examine relationships between trait and state anxiety, trait anxiety and PEP, and state anxiety and PEP (see Table 4). All correlations were found to be positively correlated.

Table 4

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-PEPQ-15 Face-to-Face</td>
<td>.45**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSAQ Face-to-Face</td>
<td>.70**</td>
<td>.57**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-PEPQ-15 Text</td>
<td>.45**</td>
<td>.68**</td>
<td>.60**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSAQ Text</td>
<td>.63**</td>
<td>.60**</td>
<td>.71**</td>
<td>.61**</td>
<td></td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (1-tailed).**

*Note.* E-PEPQ-15 = Extended Post-Event Processing Questionnaire-15 Item, SSAQ = State Social Anxiety Questionnaire.
Inferential Statistics

A one-way multivariate analysis of covariance (MANCOVA) was conducted to determine whether individuals with higher levels of trait anxiety experience a lower level of PEP in the texting situation compared to the face-to-face situation. A statistically significant difference was found between the PEP groups after controlling for trait anxiety, $F(2, 151) = 24.04, p < .001$, Wilks’ $\lambda = .76$, $\eta^2_p = .24$. A medium effect size was shown for this sample.

A one-way analysis of covariance (ANCOVA; see Table 5) was conducted to investigate the relationship between trait anxiety and PEP in the face-to-face conversation. There was a significant effect of trait anxiety on the level of PEP after controlling for face-to-face conversation, $F(1, 153) = 37.64, p < .05$. 
Table 5

One-Way ANCOVA for Trait Anxiety and PEP in Face-to-Face Conversation – Total Sample

Dependent Variable: PEP

<table>
<thead>
<tr>
<th>Source</th>
<th>Df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1</td>
<td>19121.60</td>
<td>19121.60</td>
<td>37.64</td>
<td>.001</td>
</tr>
<tr>
<td>Intercept</td>
<td>1</td>
<td>57365.62</td>
<td>57365.62</td>
<td>112.94</td>
<td>.001</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>1</td>
<td>19121.60</td>
<td>19121.60</td>
<td>37.64</td>
<td>.001</td>
</tr>
<tr>
<td>Error</td>
<td>152</td>
<td>77209.02</td>
<td>507.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>482531.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>153</td>
<td>96330.62</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .20 (Adjusted R Squared = .19)

A second ANCOVA (see Table 6) was conducted to investigate the relationship between trait anxiety and PEP in the texting conversation. There was a significant effect of trait anxiety on the level of PEP after controlling for texting conversation, \( F(1, 153) = 39.43, p < .05. \)
Table 6

One-Way ANCOVA for Trait Anxiety and PEP in Texting Conversation – Total Sample

Dependent Variable: PEP

<table>
<thead>
<tr>
<th>Source</th>
<th>Df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1</td>
<td>19871.00</td>
<td>19871.00</td>
<td>39.43</td>
<td>.001</td>
</tr>
<tr>
<td>Intercept</td>
<td>1</td>
<td>42928.46</td>
<td>42928.46</td>
<td>85.19</td>
<td>.001</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>1</td>
<td>19871.00</td>
<td>19871.00</td>
<td>39.43</td>
<td>.001</td>
</tr>
<tr>
<td>Error</td>
<td>152</td>
<td>76592.74</td>
<td>503.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>419634.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>153</td>
<td>96463.75</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .21 (Adjusted R Squared = .20)
Discussion

This study explored social anxiety and PEP in relation to face-to-face and texting conversations. Previous research (Beard & Amir, 2010; Schulz, Alpers, & Hofmann, 2008) indicated that individuals with higher levels of trait anxiety experience higher levels of state anxiety. Studies have also indicated that the level of PEP is positively correlated to social anxiety (Gaydukevych & Kocovski, 2012; Lundh & Sperling, 2002; Makkar & Grisham, 2011; Mitchell & Schmidt, 2014; Rachman, Grüter-Andrew, & Shafran, 2000; Zou & Abbott, 2012). Finally, individuals with social anxiety have been shown to prefer texting over other forms of communication such as face-to-face conversations (Lee et al., 2014; Pierce, 2009; Reid & Reid, 2007).

Consistent with prior research, the data from this study supported the hypothesis that self-reported level of trait anxiety positively correlated with self-reported level of state anxiety. The hypothesis that self-reported level of trait anxiety positively correlated with self-reported level of PEP was also supported, as was the hypothesis that self-reported level of state anxiety was positively correlated with self-reported level of PEP. Finally, individuals with higher levels of trait anxiety reported lower levels of PEP in a texting conversation compared to a face-to-face conversation.

Several limitations of the present research should be considered. One limitation is that the number of participants in this sample who are diagnosed with SAD is unknown. If the participants displayed lower levels of trait anxiety, state anxiety, and PEP as compared to a person with SAD, then application to clinical work is uncertain. Further research should focus on individuals who are formally diagnosed with SAD.
A second limitation is that the participants were not asked to respond to the same situation, but were asked to recall a personally meaningful event. Although the personal event has the advantage of real-world meaning, the severity or intensity of the chosen situation likely differed for each participant. For example, one participant described getting into an argument with a sibling while another described a situation where the participant had to inform an employer about completing a task later than expected. Memory biases should also be taken into account as they affect and distort the memory of individuals. With social anxiety, individuals tend to recall events in a more negative manner (Krans, de Bree, & Bryant, 2014). Participants were asked to imagine a social situation rather than engage in the situation and describe it shortly after its occurrence. The situation could have taken place years before describing it in the current study. The severity of the situation should be considered in future research. In addition, future research could have participants engage in a social situation created using confederates in order to help reduce the effects of memory biases.

A third limitation is that the situations participants chose varied between the texting and the face-to-face scenario. For example, people indicated that they experienced a high level of anxiety and PEP when having a face-to-face conversation with a supervisor. However, they may have never had to communicate with their supervisor via texting. Comparability of scenarios should be balanced against satisfying external validity of having the participant choose situations that are personally significant. Future research should attempt to use situations that more similar in nature and emotional intensity across face-to-face and texting conditions.
A fourth limitation is the age of the sample as participants were required to be 18 years old or older to participate in this study, and the average age of the participants in this study was 33.16 years. Individuals of different age cohorts might use texting in different ways and to different degrees. Future research could examine the impact of age on the variables of interest.

The findings of this study could be considered in the context of a therapeutic setting. Clark and Wells’ (1995) model could be incorporated into more therapeutic approaches. These approaches could address different aspects of the model such as self-focused attention, safety behaviors, and overemphasizing others’ negative thoughts that lead to the occurrence of PEP. An example of a therapeutic approach would be cognitive behavioral therapy (CBT). Therapists could address clients’ self-focused thoughts and help clients identify and change safety behaviors. Therapists could give clients a homework assignment where they can engage in a face-to-face or texting situation and receive feedback from other people to help them learn about the realistic thoughts of other people. Clark and Wells’ (1995) model may also occur with other diagnoses such as post-traumatic stress disorder (PTSD) and obsessive compulsive disorder (OCD) where individuals focus on themselves, engage in safety behaviors, overestimate the negative thoughts of other people, and repeatedly recall an event. These diagnoses need to be considered in future research and treatment.

Researchers should account for other factors of the conversation that may affect social anxiety and PEP. For texting conversations, different aspects of the conversation such as ellipses and emojis need to be considered, as individuals could interpret the conversation differently. In addition, researchers also must control for the format of
communication used in their studies as, at least in this instance, it may alter results. Other forms of communication should be evaluated, such as instant messaging, email, and online real-time video conversations, to evaluate their effects on social anxiety and PEP.

The hypotheses were supported and demonstrate the interaction of PEP with trait and state anxiety. This study also added to the literature that compares texting and face-to-face conversations in relation to trait anxiety, state anxiety, and PEP. The results of the present study indicate that texting appears to lower PEP in individuals with high social anxiety. These results could be considered in future research and in therapeutic interventions.
References


APPENDIX A: Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998)

**Instructions:** For each item, please indicate the degree to which you feel the statement is characteristic or true for you. The rating scale is as follows:

0 = Not at all characteristic or true of me.
1 = Slightly characteristic or true of me.
2 = Moderately characteristic or true of me.
3 = Very characteristic or true of me.
4 = Extremely characteristic or true of me.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I get nervous if I have to speak with someone in authority (teacher, boss, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I have difficulty making eye contact with others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I become tense if I have to talk about myself or my feelings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

34
4. I find it difficult to mix comfortably with the people I work with.

5. I find it easy to make friends my own age.

6. I tense up if I meet an acquaintance in the street.

7. When mixing socially, I am uncomfortable.

8. I feel tense if I am alone with just one other person.

9. I am at ease meeting people at parties, etc.

10. I have difficulty talking with other people.

11. I find it easy to think of things to talk about.
<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>I worry about expressing myself in case I appear awkward.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>I find it difficult to disagree with another’s point of view.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>I have difficulty talking to attractive persons of the opposite sex.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>I find myself worrying that I won’t know what to say in social situations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>I find it easy to click number 2 for this item.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>I am nervous mixing with people I don’t know well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>18.</td>
<td>I feel I’ll say something embarrassing when talking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>When mixing in a group, I find myself worrying I will be ignored.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>I am tense mixing in a group.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>I am unsure whether to greet someone I know only slightly.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**APPENDIX B: State Social Anxiety Questionnaire, Version A (Kashdan & Steger, 2006)**

**Directions:** Please read the following 7 items and indicate how frequently you experienced these thoughts during the conversation using the scale below.

1 = Very Slightly / Not at all  
2 = A Little  
3 = Moderately  
4 = Very Much  
5 = Extremely

<table>
<thead>
<tr>
<th>1. I worried about what other people thought of me.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

2. I was afraid other people noticed my shortcomings.

<table>
<thead>
<tr>
<th>2. I was afraid other people noticed my shortcomings.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

3. I worried and then I realized that I should choose 5 for this item.

<table>
<thead>
<tr>
<th>3. I worried and then I realized that I should choose 5 for this item.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

4. I was afraid others did not approve of me.

<table>
<thead>
<tr>
<th>4. I was afraid others did not approve of me.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
5. I was worried that I would say or do the wrong things.

6. When I was talking to someone, I was worried about what they were thinking of me.

7. I felt uncomfortable and embarrassed when I was the center of attention.

8. I found it hard to interact with people.
APPENDIX C: State Social Anxiety Questionnaire, Version B (Kashdan & Steger, 2006)

**Directions:** Please read the following 7 items and indicate how frequently you experienced these thoughts during the conversation using the scale below.
1 = Very Slightly / Not at all  
2 = A Little  
3 = Moderately  
4 = Very Much  
5 = Extremely

<table>
<thead>
<tr>
<th>1. I worried about what other people thought of me.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. I was afraid other people noticed my shortcomings.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. I was afraid that others did not approve of me.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. I was worried that I would say or do the wrong things.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
5. When I was talking to someone, I was worried about what they were thinking of me.

6. I was afraid and then I realized that I should choose 3 for this item.

7. I felt uncomfortable and embarrassed when I was the center of attention.

8. I found it hard to interact with people.
APPENDIX D: Extended Post-Event Processing Questionnaire, Face-to-Face

(Wong, 2015)

We would like you to remember or imagine one specific social situation where you had a conversation with someone **face-to-face** which may lead or led to unreasonably strong or unrealistic anxiety or discomfort. The situation should have been of personal relevance to you. Please choose the one that was most intense for you.

Here are examples but choose a situation that is relevant to you:

- You need to ask a co-worker a question. You need to ask this question by starting and maintaining a face-to-face conversation with that co-worker.
- You are having difficulties completing a task at work. You have to begin and maintain a face-to-face conversation with your supervisor.
- You have a romantic interest in someone. You need to have a face-to-face conversation with that person.

Please describe the situation you have chosen and remember to refer to this situation while answering the following questions.

<table>
<thead>
<tr>
<th>0 (Not at all)</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100 (Very Much So)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. After the event was over, did you think about it a lot?</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>


2. Did your memories and thoughts about the event keep coming into your head even when you did not wish to think about it again?

3. Did the thoughts about the event interfere with your concentration?

4. Did you find it difficult to forget about the event?

5. Did you try to resist thinking about the event?

6. If you repeatedly thought about the event, did your feelings about the event worsen?

7. Have you ever wondered about whether you could have avoided or prevented your behavior/feelings during the event?
8. Have you ever wished that you could turn the clock back and do it again but better this time?

9. When remembering reading this item, I will now click 80, do you understand?

10. Did you experience a sense of shame while remembering your behaviour during the event?

11. Did you think about anxious feelings that you had experienced during the event?

12. When remembering the situation, did other instances of past failure that you had experienced in the same way come into your mind?
13. Did you criticize yourself for your behavior in the situation?  

14. Did you think about the event more than you wanted to?  

15. Did you think about bodily sensations you experienced during the situation?  

16. In my memories about the event, I saw myself (my behavior, my attributes) …
APPENDIX E: Extended Post-Event Processing Questionnaire, Text (Wong, 2015)

We would like you to remember or imagine one specific social situation where you had a conversation with someone *via texting* which may lead or led to unreasonably strong or unrealistic anxiety or discomfort. The situation should have been of personal relevance to you. Please choose the one that was most intense for you.

Here are examples but choose a situation that is relevant to you:

- You need to contact your co-worker. You decide to contact them by texting on a phone.
- You are unable to come into work. You choose to contact your supervisor by sending a text.
- You met someone who asks you out on a date. That person asks you to text him or her.

Please describe the situation you have chosen and remember to refer to this situation while answering the following questions.

<table>
<thead>
<tr>
<th>0 (Not at all)</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100 (Very Much So)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. After the event was over, did you think about it a lot?</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<td>o</td>
<td>o</td>
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<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
2. Did your memories and thoughts about the event keep coming into your head even when you did not wish to think about it again?

3. Did the thoughts about the event interfere with your concentration?

4. Did you find it difficult to forget about the event?

5. Did you try to resist thinking about the event?

6. After the event of reading this item, we want you to click 100 on this question, okay?
7. If you repeatedly thought about the event, did your feelings about the event worsen?

8. Have you ever wondered about whether you could have avoided or prevented your behavior/feelings during the event?

9. Have you ever wished that you could turn the clock back and do it again but better this time?

10. Did you experience a sense of shame while remembering your behaviour during the event?

11. Did you think about anxious feelings that you had experienced during the event?
12. When remembering the situation, did other instances of past failure that you had experienced in the same way come into your mind?

13. Did you criticize yourself for your behavior in the situation?

14. Did you think about the event more than you wanted to?

15. Did you think about bodily sensations you experienced during the situation?
<table>
<thead>
<tr>
<th>0 (...In a Positive Way)</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100 (...In a Negative Way)</th>
</tr>
</thead>
</table>

16. In my memories about the event, I saw myself (my behavior, my attributes) …
APPENDIX F: IRB Approval

DATE: May 23, 2018

TO: Amanda Newquist, B.S.
FROM: Western Kentucky University (WKU) IRB

PROJECT TITLE: [1229400-1] Texting and its Impact on Post-Event Processing and Symptoms of Social Anxiety
REFERENCE #: IRB 19-418
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: May 23, 2018

REVIEW TYPE: Exempt from Full Board Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Exempt from Full Board Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by an implied consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or irb@WKU.edu. Please include your project title and reference number in all correspondence with this committee.
APPENDIX G: Pre-Screening Question

Have you ever had a conversation (more than a simple greeting) via texting on a cellular phone?

☐ Yes  ☐ No
INFORMED CONSENT DOCUMENT

Project Title: Texting and Its Impact on Post-Event Processing and Symptoms of Social Anxiety

Investigator: Amanda Newquist, WKU Department of Psychology.
amanda.newquist402@opper.wku.edu

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your agreement to participate in this project. You must be 18 years old or older to participate in this research study.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have. You should keep a copy of this form for your records.

1. **Nature and Purpose of the Project:** The purpose of this study is to understand the relationship between different types of communication and the perception of social evaluation.

2. **Explanation of Procedures:** You will respond to questions on five different assessments to help us evaluate the hypotheses for this study. Assessments will ask you how you generally feel in a situation, ask you to consider varied in the situations, and answer questions about the situations that you considered in other portions. Then, you will complete a set of demographic questions at the end of these assessments. You will be given 30 minutes to complete the task, but most finish in about 10 minutes.

3. **Discomfort and Risks:** You will be asked to recall or imagine socially challenging conversations and your reactions to the events.

4. **Benefits:** You will receive $1.50 for your participation if you correctly address the attention checks in the assessments which will also contribute to the field of knowledge.

5. **Confidentiality:** Your name will not be connected with the information collected in the study. Results will be presented only in aggregate form.

6. **Refusal/Withdrawal:** Refusal to participate in this study will have no effect on any future services you may be entitled to or from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Your continued cooperation with the following research implies your consent.

THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Paul Mooney, Human Protections Administrator
TELEPHONE: (270) 745-2129

Institutional Review Board Approved

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APPENDIX I: Demographics

Age


Gender

○ Male

○ Female

○ Other (Please Specify): 

How would you describe your ethnicity?

○ Asian or Pacific Islander

○ Asian Indian

○ Black/African American (non-Hispanic)

○ Caucasian/White

○ Native American

○ Latino/Hispanic

○ Puerto Rican

○ Other (please specify): 

○ Decline to answer
How would you describe your educational level?

- [ ] High school graduate or equivalent (e.g. GED)
- [ ] Some college, no degree
- [ ] Associate’s degree
- [ ] Bachelor’s degree
- [ ] Master’s degree
- [ ] Professional degree
- [ ] Doctorate degree
- [ ] Other (please specify):  

APPENDIX J: Debriefing Statement

Thank you for your participation in this research. The purpose of this study was to examine social anxiety and the extent to which people think about an event after it is over. The study also examined the effect in both face-to-face and texting conversations. Your participation is not only greatly appreciated by the researchers, but the data collected in this study could possibly help professionals who provide treatment for individuals with symptoms of social anxiety. If you experienced discomfort while answering these surveys, you may contact the Lifeline Crisis chat (www.crisischat.org) for assistance.